United States
Department of
Agriculture

Humboldt-Toiyabe
National Forest

Carson
Ranger District

Rangeland Resources Report

California Integrated Weed Management Project

Prepared by: */s/ Courtney Ghiglieri*

Courtney Ghiglieri
Rangeland Management Specialist

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I. INTRODUCTION

The Bridgeport and Carson Ranger Districts are proposing to implement an Integrated Weed Management Project (IWMP) to treat terrestrial, non-native invasive plants on the Humboldt-Toiyabe National Forest System lands in California. The project area includes approximately 693,721 acres across nine California counties and two ranger Districts, Bridgeport and Carson. The Forest Service also proposes to use a variety of methods to treat noxious and invasive plant species including prevention, mechanical, manual (hand-pulling), chemical, and biological controls. The purpose is also to establish criteria, under which an Early Detection Rapid Response (EDRR) approach would be implemented, thereby allowing for rapid treatment of newly discovered target invasive plants. The project includes annually treating a portion of the invasive plant infestations that occur in California on the Humboldt-Toiyabe National Forest. The number of infestations and acres treated each year will depend upon available funding. Treatments would involve integrated prescriptions that generally combine the use of herbicides with mechanical, manual, and biological control methods over several years. The project would include treating existing populations as well as any future infestations that might occur. The purpose of this report is to analyze the effects of this proposed action on rangeland resources in the project area.

II. BACKGROUND

Whether or not a landscape is disturbed or in pristine condition, the presence of non-native invasive weeds signifies an area is at risk from a health and sustainability viewpoint (O'Brien *et al.* 2003). Non-native invasive weeds are capable of producing highly viable seeds, which can persist in the soil for several decades (D'Antonio and Meyerson 2002). Noxious weed seed is transported and dispersed by wind, water, livestock, wildlife, human activities, and motor vehicles (USDI BLM 1998, Freilich et al. 2003). Degraded or stressed plant communities can provide open habitat or sites for the establishment and increase of weeds. Many of these communities are on benches adjacent to streams and could continue to see the expansion of existing invasive weed populations and establishment of new populations if not managed. Infestations reduce the amount of available forage for wildlife and livestock, and have the ability to take over large areas of land, reducing valuable public land resources.

The terms "Invasive Species" and "Noxious Weeds" are used interchangeably throughout this document to describe terrestrial, non-native plant species that pose a threat to native plant communities. Invasive plants are defined in Executive Order 13112 as "non-native plants whose introduction does or is likely to cause economic or environmental harm or harm to human health." "Noxious" is a legal term, used by regulatory agencies, such as the California Department of Food and Agriculture (CDFA) and the U. S. Department of Agriculture Animal Plant Health Inspection Service (USDA-APHIS) to describe plants considered to be a threat to agriculture and/or non-crop areas and listed on a noxious weed list maintained by one or both of the agencies.

III. EXISTING CONDITION

RANGELAND RESOURCES

The Bridgeport and Carson Ranger Districts contain 53 grazing allotments within the project area covering approximately 497,440 acres. The allotments vary in size from 513 to 64,985 acres of public lands. Tables 1 and 2 provide information on the size of each allotment and the amount of weeds within them. Across the allotments, mapping indicates there is approximately 740 acres of land identified for weed treatment. Grazing within the Carson RD occurs in the spring and summer

months, while grazing occurs throughout the year on the Bridgeport RD, with much of the use concentrated during spring and summer months. On both districts, summer use allotments are commonly found at higher elevations. On the Bridgeport RD winter use allotments are primarily located in lower elevations associated with an arid climate. The elevation and vegetation present on any given allotment plays a significant role in determining the grazing season and system implemented for that allotment.

The majority of the known infested areas on the Bridgeport and Carson Ranger Districts occur primarily as scattered, individual populations that are between less than one acre and five acres in size. This is also true for infestations within livestock grazing allotments in the project area; less than 1% of any given allotment is affected. These Infestations typically dominate areas after major disturbances such as wildfire, heavy recreational use, or mismanaged livestock grazing (generally legacy effects). Weeds found within the grazing allotments include hoary cress *(Cardaria draba);* perennial pepperweed *(Lepidium latifolium);* scotch thistle *(Onopordum acanthium);* Canada thistle *(Cirsium arvense);* bull thistle *(Cirsium vulgare)*; musk thistle *(Carduus nutans);* various knapweeds; and cheatgrass *(Bromus tectorum)*. Cheatgrass *(Bromus tectorum L.)* is one of the most notorious invasive species in North America; the magnitude of the invasion and effects on native ecosystems makes this possibly the most significant plant invasion in North America (Chambers *et al.* 2007). The spread of cheatgrass is often presumed to have been exacerbated by heavy cattle grazing in the late 1800's and early 1900's; however, cheatgrass will also infest 'ungrazed' sites as some other form of disturbance acts as a vector.

Surveys have not been completed within the Bridgeport allotments, therefore there are no known infestations to report (Table 1); however, cheatgrass is present. Known occurrences on the Carson Ranger District are described below and in Table 2 below.

Dumont S&G Allotment

Weeds present in the Dumont S&G Allotment include bull thistle (*Cirsium vulgare*) which occurs in the meadow systems, streambanks, and along hiking trails at stream crossings. Cheatgrass is also present.

Wolf Creek C&H

Weeds present in the Wolf Creek C&H Allotment include bull and Canada thistle (*Cirsium arvense*), and occur in meadows, along roadsides, along streambanks, and irrigation ditches. Cheatgrass is also present.

Noble Canyon C&H

Weeds present in the Noble Canyon C&H Allotment include bull thistle (*Cirsium vulgare*), which occurs in the meadow systems and along hiking trails. Cheatgrass is also present.

Dressler (Pleasant Valley) C&H

Weeds present in the Dressler C&H Allotment include cheatgrass (*Bromus tectorum*), bull thistle (*Cirsium vulgare*) which occurs in the wet meadow systems. Cheatgrass is also present.

Hope Valley C&H

Weeds present in the Hope Valley C&H Allotment include cheatgrass (*Bromus tectorum*), bull thistle (*Cirsium vulgare*), which occurs in the meadow systems, along streambanks, and along roadsides. Cheatgrass is also present.

Double Springs C&H

Weeds present in the Double Springs C&H Allotment include cheatgrass (*Bromus tectorum*), hoary cress (*Cardaria draba*) and bull thistle (Cirsium vulgare), which are along the roadsides. Cheatgrass is also present.

Dog Valley C&H

Weeds present include cheatgrass (*Bromus tectorum*), musk thistle (*Carduus nutans*) and scotch thistle (*Onopordum acanthium*), which occur in meadow systems and along roads. Cheatgrass is also present.

Dog Valley S&G

Weeds present in the Dog Valley S&G Allotment include cheatgrass (Bromus tectorum), musk thistle (Carduus nutans) and scotch thistle (Onopordum acanthium), which occur in meadow systems and along roads. Cheatgrass is also present.

Campbell-Loope S&G

Weeds present in the Campbell-Loope S&G Allotment include cheatgrass (Bromus tectorum), bull thistle (Cirsium vulgare), scotch thistle (Onopordum acanthium), and Canada thistle (Cirsium arvense), which occur in meadow systems, aspen stands, uplands and along roads. Cheatgrass is also present.

Leviathan S&G

Weeds present in the Leviathan S&G Allotment include cheatgrass (Bromus tectorum), bull thistle (Cirsium vulgare), and scotch thistle (Onopordum acanthium), which occur in meadow systems, uplands, and along roads. Cheatgrass is also present.

Cottonwood S&G

Weeds present in the Cottonwood S&G Allotment include cheatgrass (Bromus tectorum), bull thistle (Cirsium vulgare), and hoary cress (Cardaria draba), which occur in meadow systems, streambanks, aspen stands, and along roads. Cheatgrass is also present.

Table 1. Bridgeport Ranger District grazing allotments information and acres of weeds. Acres of Cheatgrass are not typically mapped.

Allotment	Acres within CA	Total Acres	% in CA	Kind	Class	Status	Livestock Number	On Date	Off Date	Acres of known Noxious/Invasive Species Proposed for Treatment	Percent of Allotment Affected
Buckeye C&H	5645	5645	100	Cattle	Cow/calf	Active	243	6/24	9/18	0	0
Burcham S&G	9957	9957	100	Sheep	Ewe/lamb	Active	900	7/1	9/15	0	0
Cameron Canyon S&G	4216	4216	100	Sheep	Ewe/lamb	NEPA Pending				0	0
Cottonwood S&G	13553	13553	100	Sheep	Ewe/lamb	Active	900	6/16	10/25	0	0
Dunderberg S&G	6706	6706	100	Sheep	Ewe/lamb	NEPA Pending				0	0
Eagle Creek C&H	5016	5016	100	Cattle	Cow/calf	Active	300	7/16	9/15	0	0
Fryingpan-Murphy Creek C&H	30051	32584	92	Cattle	Cow/calf	Active	225	6/16	9/20	0	0
Green Creek S&G	1306	1306	100	Sheep	Ewe/lamb	Vacant				0	0
Hunewill C&H	1189	1189	100	Cattle	Cow/calf	Active	120	5/25	6/23	0	0
Junction C&H	4101	4101	100	Cattle	Cow/calf	Active	172	6/16	8/24	0	0
Little Walker C&H	25377	25377	100	Cattle	Cow/calf	Active	528	6/16	9/15	0	0
Lost Cannon C&H	10203	10227	100	Sheep	Ewe/lamb	Active	700	5/20	6/10	0	0
							700	8/1	8/25		
Masonic C&H	18774	34238	55	Cattle	Cow/calf	Active	80	7/1	10/15	0	0
Mill Canyon S&G	7646	7646	100	Sheep	Ewe/lamb	Active	1025	6/1	6/25	0	0
Mount Jackson C&H	7260	7260	100	Cattle	Cow/calf	Active	76	6/16	9/30	0	0
North Swauger S&G	3909	3909	100	Sheep	Ewe/lamb	Active	1200	7/27	8/10	0	0
Piute C&H	22581	22728	99	Sheep	Ewe/lamb	Active	1025	8/25	9/23	0	0
Poison Creek S&G	22899	22899	100	Sheep	Ewe/lamb	Active	1025	6/19	10/25	0	0
Rickey S&G	7026	7026	100	Sheep	Ewe/lamb	Active	900	6/28	9/30	0	0
Robinson Creek C&H	880	880	100	Cattle	Cow/calf	Active	200	6/1	10/15	0	0
Rough Creek C&H	1880	18645	10	Cattle	Cow/calf	Active	39	6/1	10/15	0	0
Sardine C&H	16838	16851	100	Cattle	Cow/calf	Active	125	7/16	9/15	0	0

Allotment	Acres within CA	Total Acres	% in CA	Kind	Class	Status	Livestock Number	On Date	Off Date	Acres of known Noxious/Invasive Species Proposed for Treatment	Percent of Allotment Affected
Sierra Blanca C&H	7459	7459	100	Cattle	Cow/calf	Active	135	6/16	9/15	0	0
Silver Creek S&G	19333	19333	100	Sheep	Ewe/lamb	Active	700	7/16	8/15	0	0
							700	8/26	9/15		
							1400	9/15	9/30		
Slinkard C&H	4359	4360	100	Cattle	Cow/calf	Active	50	5/1	8/30	0	0
South Swauger S&G	8649	8649	100	Sheep	Ewe/lamb	Active	1200	7/6	7/26	0	0
								8/11	8/28		
Summers Meadow S&G	2459	2459	100	Sheep	Ewe/lamb	NEPA Pending				0	0
Sweetwater C&H	38735	64984	60	Cattle	Cow/calf	Active	988	6/16	10/15	0	0
Tamarack S&G	5973	5973	100	Sheep	Ewe/lamb	NEPA Pending				0	0
Topaz C&H	64	1400	5	Cattle	Cow/calf	Active	20	11/15	5/25	0	0
Virginia Creek C&H	2258	2258	100	Cattle	Cow/calf	Vacant				0	0
Wildhorse C&H	857	25639	3	Cattle	Cow/calf	Active	50	12/1	5/31	0	0

Table 2. Carson Ranger District grazing allotments information and acres of weeds. Acres of Cheatgrass are not typically mapped.

Allotment	Acres within CA	Total Acres	% In CA	Kind	Class	Status	Livestock Number	On Date	Off Date	Acres of known Noxious/Invasive Species Proposed for Treatment	Percent of Allotment Affected
Bagley Valley S&G	9711	9711	100%	Sheep	Ewes/lambs	Active	722 head months	6/1	10/20	0	0%
Dumont S&G	15968	15968	100%	Sheep	Ewes/lambs	Active	3,233 head months	6/1	10/20	134.9	<1%
Bull Canyon C&H	11734	11734	100%	Cattle	Cow/calf	Active	150	6/25	9/15	0	0%

Allotment	Acres within CA	Total Acres	% In CA	Kind	Class	Status	Livestock Number	On Date	Off Date	Acres of known Noxious/Invasive Species Proposed for Treatment	Percent of Allotment Affected
Wolf Creek C&H	9702	9702	100%	Cattle	Cow/calf	Active	90	6/16	9/30	118.7	<1%
Murray Canyon C&H	8276	8276	100%	Cattle	Cow/calf	Active	160	8/1	9/15	0	0%
Barber C&H	1052	1052	100%	N/A	N/A	Vacant	N/A	N/A	N/A	0	0%
Noble Canyon C&H	20680	20680	100%	Cattle	Cow/calf	Active	144	6/1	10/10	0.9	<1%
Dressler (Pleasant Valley)	2592	2592	100%	Cattle	Cow/calf	Active	14	5/15	10/31	3.4	<1%
Charity Valley C&H	4489	4489	100%	Cattle	Cow/calf	Active	100	7/15	10/15	0	0%
Hope Valley C&H	20262	20262	100%	Cattle	Cow/calf	Active	103	6/26	10/25	19.1	<1%
Millberry C&H	2022	2022	100%	Cattle	Cow/calf	Active	15	6/1	7/31	0	0%
Bamert C&H	4072	4072	100%	N/A	N/A	Vacant	N/A	N/A	N/A	0	0%
Double Springs C&H	28	513	14%	N/A	N/A	Vacant	N/A	N/A	N/A	.04	<1%
Dog Valley C&H	4125	4125	100%	N/A	N/A	Vacant	N/A	N/A	N/A	25.8	<1%
Dog Valley S&G	12248	12248	100%	N/A	N/A	Vacant	N/A	N/A	N/A	98.6	<1%
Balls Canyon C&H	3588	3588	100%	N/A	N/A	Vacant	N/A	N/A	N/A	0	0%
Evans Canyon C&H	839	839	100%	N/A	N/A	Vacant	N/A	N/A	N/A	0	0%
Elledge C&H	2316	2316	100%	N/A	N/A	Vacant	N/A	N/A	N/A	0	0%
Campbell-Loope S&G	17846	17846	100%	Sheep	Dry Ewes	Active	1650	9/1	10/26	17.6474	<1%
Leviathan S&G	8,975	8,975	100%	Sheep	Ewes/lambs	Active	1460	6/21	9/20	.7	<1%
Cottonwood S&G	17,000	19,270	88%	Sheep	Ewes/lambs	Active	3,274 head months	5/1	9/30	320	<2%

In an effort to reduce the spread of noxious weeds (prevention), the Intermountain Regional Forester signed a Noxious Weed Free Hay Order in February 2003. Pursuant to 36 CFR 261.50 (a) and (b) CFR 261.58(t), order 04-00-097, a Regional Forester may prohibit possessing, storing, or transporting any part of a tree or other plant, as specified in the order. This order prohibits the transport and storage of any hay products onto National Forest System lands unless the products are certified by the state of Nevada or California as noxious weed-free. Furthermore, Rangeland Management Specialists on both districts include the Order and other language in the Annual Operating Instructions signed by the District Rangers and Permittee's prior to livestock turnout. Forest Service personnel are currently manually treating invasive weeds within portions of the allotments that are covered in existing NEPA decisions (Table 4).

IV. MANAGEMENT DIRECTION

Forest-wide management direction is included in Appendix A of this report and was obtained from the Toiyabe Land Use and Forest Management Plan (USDA 1986), the 2001 ROD for the Sierra Nevada Forest Plan Amendment (Framework) as amended by the 2004 ROD for the Sierra Nevada Forest Plan Amendment (Framework) (USDA 2001, 2004), and the Greater Sage Grouse Bi-State Sage Grouse Distinct Population Segment Forest Plan Amendment (USDA 2016). Direction includes only those standards and guidelines applicable to livestock grazing management in the analysis area.

V. SCOPE OF THE ANALYSIS

The project area is located across the Bridgeport and Carson Ranger Districts in Alpine, El Dorado, Lassen, Mono, Nevada, Placer, Plumas, Sierra, and Tuolumne counties, California (Figure 1). The integrated weed management plan would provide direction for treatment of noxious and invasive weed species across approximately 693,721 acres on the two ranger districts, of which covers 53 grazing allotments (Tables 1 and 2). Figure one provides a vicinity map that illustrates the project area. Figures 2 - 4 show the current locations of invasive weed populations in the northern, central, and southern parts of the project area.

The analysis area for direct, indirect and cumulative effects to the rangeland resource is the grazing allotments located within the project area on the Bridgeport and Carson Ranger Districts.

VI. ALTERNATIVES ANALYZED

ALTERNATIVE 1. NO ACTION

Under the No Action Alternative, control and/or eradication of noxious and invasive weeds would not occur on HTNF lands that occur in California. Prevention measures, inventory, and monitoring would continue as environmental analysis under the National Environmental Policy Act (NEPA) is not required for these activities. While prevention and education will help slow the spread of invasive plants, these measures alone are insufficient to address the spread of existing infestations. Invasive plant treatments associated with existing NEPA decisions (Table 3) would continue to occur but new or additional efforts would not be implemented. Table 3 lists existing NEPA decision that include weed treatments; portions of the various projects overlap with grazing allotments.

Table 3. Existing NEPA decisions for Bridgeport and Carson Ranger Districts.

Project	Weed Species	Treatment Method	Date	Grazing Allotment Within the Project Area
Dog Valley Fuels Reduction and Ecosystem Enhancement	Musk thistle, spotted knapweed, tall whitetop, cheatgrass, medusahead	*Hand pulling; clipping	2009 (ongoing)	Dog Valley S&G
Dog Valley Route Adjustment Project	Musk thistle, spotted knapweed, tall whitetop, cheatgrass, medusahead	*Hand pulling; clipping	2009 (ongoing)	Dog Valley C&H, Dog Valley S&G, Balls Canyon C&H, Evans Canyon C&H
West Carson Route Adjustment Project	Perennial pepperweed, bull thistle	*Hand pulling; clipping	2013 (ongoing)	Wolf Creek C&H, Murray Canyon C&H, Barber C&H, Noble Canyon C&H, Dressler C&H, Charity Valley C&H, Hope Valley C&H, Millberry C&H, Bamert C&H, Double Springs C&H, Elledge C&H, Campbell-Loope S&G, Leviathan S&G, Cottonwood S&G, Bagley Valley S&G, Dumont S&G
Markleevillage Fuels Reduction Project	Bull thistle, cheatgrass	*Hand pulling; clipping	2010(ongoing)	N/A
East Alpine Rangeland Project	Bull thistle, hoary cress, Canada thistle cheatgrass	*Hand pulling; clipping	2012(ongoing)	Cottonwood S&G Bagley Valley S&G Dumont S&G Silver King S&G
East Carson River Restoration	Bull thistle, hoary cress, cheatgrass	*Hand pulling; clipping	2011(ongoing)	Cottonwood S&G
Wheeler Creek Habitat Restoration Project	No weeds present but monitoring	*Hand pulling; clipping	2014	Little Walker C&H
Bridgeport Travel Management	Hoary cress, bull thistle, Canada thistle, cheatgrass	*Hand pulling; clipping	2011	All of the Bridgeport grazing allotments in Table 1

* Because hand pulling is not always effective or feasible for some species that occur in large scattered populations (such as medusahead and cheatgrass) or for long tap-rooted perennial species (perennial pepperweed, hoary cress, Canada thistle); many of the infestations have the potential to significantly increase.

ALTERNATIVE 2- PROPOSED ACTION

The Proposed Action includes annually treating a portion of the invasive plant infestations that occur in California on the Humboldt-Toiyabe National Forest. The number of infestations and acres treated each year will depend upon available funding. Treatments would involve integrated prescriptions that generally combine the use of herbicides with mechanical, manual, and biological control methods over several years. The proposed action would include treating existing populations as well as any future infestations that might occur.

A. Implementing Treatment Strategies

Based in part on the California and Nevada State classification systems for each known invasive plant infestation, and for future infestations that may be discovered, one of three treatment strategies is proposed:

- Annually treat and monitor the infestation with the goal of eradication.
    - Infestations of species documented as highly invasive with severe or substantial ecological impacts in California and those that are currently limited in their distribution and abundance on the Forest making their eradication an achievable goal.
- Treat and monitor a portion of the identified occurrences each year, focusing on reducing the area coverage and amount over time (eradicate/control).
    - Under this strategy, invasive plant species would be annually treated, focusing first on eradicating and then containing the most isolated, outlying occurrences and, over time, reducing the footprint of larger, less isolated occurrences. Treatments will also be designed to contain infestations along transit routes in order to prevent these invasive plants from moving into natural forest settings. Where appropriate, restoration and reclamation activities would be designed to lower spread potential.
- Treat only leading edge infestations or where concurrent with higher priority species (control)
    - Under this strategy targeted efforts to control, contain or eradicate certain species would be a lower priority for one or more of the following reasons: 1) the species is less invasive and unlikely to create large monocultures on NFS lands; 2) the species cannot be feasibly addressed with available treatments at the Forest- wide scale; or 3) the species is not causing significant ecological impacts.

Criteria for prioritizing treatment sites, given limited funding, will follow the following guidelines:

- Infestations with a high potential for future spread (prolific species found in high traffic areas such as administrative sites, trailheads, major access points for the forest, and systems vulnerable to invasion (recent fires)
- High value areas (such as TEP habitat; Wilderness, etc) and portals to these areas
- Early invaders with small isolated infestations on the forest.
- Leading edge and satellite occurrences of larger more established infestations
- Treating the perimeter of larger infestations

Using the above criteria, in addition to other site specific information, the HTNF will focus on 13 non-native invasive species (Table 4) for treatment and monitoring. Of the 13 species listed below, 10 are included on both the California and Nevada State Noxious Weed lists. Where the classification goal differs between the States (prevention, control, eradicate); site specific information

and local knowledge of infestations was used to determine a treatment goal. For reference the classification system is provided below:

- Class A weeds are typically given the highest priority for treatment. These weeds either currently do not occur in the state or occur in such low numbers that eradication is considered possible. Prevention and eradication are the treatment goals for Class A weeds.
- Class B weeds are invasive weeds with populations of varying distribution and densities within the state. The level of mandated control is based on local conditions. These weeds may require eradication within certain areas of the state. Eradication and control are the treatment goals for Class B weeds.
- Class C weeds are widespread and common within the state. Control is generally the treatment goal for Class C weeds.

Table 4. Priority weed species for treatment and associated treatment goal.

Weed Species	Mapped acres on HTNF Lands in CAIWMP area	Number of Individual Locations	CA State Weed List Category	NV State Weed List Category	Treatment Goal	Species Description
Russian Knapweed (*Acroptilon repens*)	0	0	B	B	Prevention	Perennial weed that has a creeping root system. It reproduces by roots and seed. Manual treatments (hand pulling) effective for small populations; pre-emergent (fall) herbicide applications for larger more established populations
Diffuse Knapweed (*Centaurea diffusa*)	2	12	A	B	Control/ Eradicate	Tap-rooted biennial, occasionally annual or short-lived perennial forb that reproduces by seed. Can be hand pulled in spring before flowering; spring herbicide application for larger populations; mowing ineffective
Spotted knapweed (*Centaurea maculosa*)	5	4	A	A	Control/ Eradicate	Short lived perennial that reproduces solely by seed. Same treatment as diffuse knapweed
Musk Thistle (nodding plumeless thistle) (*Carduus nutans*)	462	57	A	B	Control	Biennial weed that has a deep, fleshy taproot and reproduces by seed. Herbicide application during reproductive period most effective treatment method; Insect Bio-control
Scotch Thistle (*Onopordum acanthium*)	12	21	A	B	Control	Biennial weed that reproduces by seed. Can form dense stands that are difficult to penetrate. Herbicide application of rosettes in fall most effective
Bull Thistle (*Cirsium vulgare*)	234	62	N/A	N/A	Control	Short-rooted biennial weed that reproduces by seed; hand pulling very effective; herbicide application of rosettes in fall or spring also effective; insect bio-controls effective.
Canada Thistle (*Cirsium arvense*)	8	19	B	C	Control	Perennial weed that has a deep, extensive creeping root system. Repeated mowing followed by herbicide most effective; several effective insect bio-controls

Weed Species	Mapped acres on HTNF Lands in CAIWMP area	Number of Individual Locations	CA State Weed List Category	NV State Weed List Category	Treatment Goal	Species Description
Yellow-Star Thistle (*Centaurea solstitialis*)	4	3	C	A	Control/ Eradicate	Annual weed that reproduces by seed and can have a long tap root. Mowing and hand pulling effective if at right time; targeted grazing and insect bio-controls can be very effective
Perennial Pepperweed (broad-leaf pepperweed) (*Lepidium latifolium*)	12	5	B	C	Control	Perennial weed that has a creeping root system and can be found in moist areas and pastures. Hand pull for small infestations (a few plants); targeted grazing followed by herbicide application;
Hoary Cress (whitetop) (*Cardaria draba*)	204	19	B	C	Control	Perennial weed that reproduces through roots and seed. Hand pull small infestations; mowing and herbicide
Medusahead (*Taeniatherum caput-medusae*)	223	13	C	B	Control	Annual invasive grass that reproduces by seed. Mowing, prescribed fire, herbicides can all be effective treatment
Cheatgrass (*Bromus tectorum*)	unknown	unknown	N/A	N/A	Control	See medusahead; targeted grazing also effective
Curly dock(*Rumex crispus)* [1]	unknown	unknown	N/A	N/A	Control	Perennial prolific seed producer; occurs in drainages and wetter portions of pastures; hand pulling/digging or herbicide treatments

1 Curly dock is not on the California or Nevada State Noxious Weed List ; however, this species has been documented in TEP species habitat within the project area.

B. Additional Details of the Proposed Action

PREVENTION

A major component of the Proposed Action will include incorporating measures into project planning and project implementation that prevent, or greatly reduce the potential for weeds to become established. To prevent the spread of noxious and invasive weeds, the following preventive measures will be incorporated:

- **Noxious Weed Risk Assessment** –Forest Service Manual 2081.02 requires a noxious weed assessment be conducted when any ground disturbing action or activity is proposed to determine the risk of introducing or spreading noxious weeds associated with the proposed action. For projects having moderate to high risk of introducing or spreading noxious weeds, the project decision document must identify noxious weed control measures that must be undertaken during and/or before project implementation. The Risk Assessment includes information on current condition of the project area, potential risk of increased spread and design features to minimize potential for new infestations. The Assessment also determines if weed treatments need to occur prior to commencement of project activities.

- **Best Management Practices** (BMPs)-incorporate BMPS for weed prevention into all project planning efforts which include a ground disturbing component. BMPS include (but not limited to):
  - Require all construction vehicles to be inspected for weeds prior to entering work site

- Set up weed wash stations and clean all equipment before leaving the project site if operating in areas infested with weeds
- All sand, gravel, borrow, and fill material will be inspected and certified weed free
- Locate and use weed-free project staging areas. Avoid or minimize all types of travel through weed-infested areas, or restrict travel to periods when the spread of seeds or propagules is least likely;
- To the extent feasible, design project areas to avoid known noxious weed infestations; if unavoidable then assess if pre-treatment needs to be conducted prior to construction activities
- Before ground-disturbing activities begin, inventory weed infestations and prioritize areas for treatment in project operating areas and along access routes;
- Incorporate a post monitoring and treatment plan into all ground disturbing project planning efforts. Monitoring should continue for a minimum of five years after the project is completed to assure an Early Detection Rapid Response (EDRR) to new infestations.

- **Revegetation/Restoration** (following Forest Service project activities)

  Revegetation will involve site preparation such as raking to prepare a seed bed to promote seed germination, planting of seeds and/or propagules (depending on the species, this is done either in early spring or late fall to take advantage of available moisture), vigilant treatment of invasive plants as they germinate from the existing seedbank, and monitoring the results. In some cases, a follow-up seeding/planting may need to be done.

  Revegetation with carefully selected plant materials is a critical component of integrated weed management strategies. Commonly used control tactics, such as manual or chemical treatments, in effect create a disturbance on the current vegetation community. These control tactics may eliminate or suppress target invasive species in the short term, but the resulting gaps in vegetation and bare soil create open niches susceptible to secondary invasion by the same or other undesirable plant species. The spot method can leave sites open to secondary invasion since larger areas of vegetation are eliminated.

  Spot spray areas would be reviewed and determination made about the need for active restoration. Areas with bare soil created by the treatment of invasive plants would be evaluated for restoration needs by a botanist and soil scientist. Revegetation would occur where needed to meet resource goals, including desired conditions for ground cover and native plant composition.

  Determining the need for active restoration/revegetation versus passive restoration (allowing plants on site to fill in a treated area) is the first step when addressing this need. Passive restoration depends on re-colonization from the existing seedbank and from plant propagules dispersed from surrounding sources, as well as native species from within the invasive plant site. Passive restoration may be appropriate where treated sites leave relatively little bare ground or along less-disturbed roadsides where adjacent native vegetation can provide adequate seed source to recolonize treated areas.

  Active revegetation is a long-term commitment that would be focused on areas that are either ecologically unique, or where active revegetation is necessary to provide competition for highly aggressive invasive plant species. In some cases, active restoration is not the preferred choice due to the nature of the site. Examples include continually disturbed areas, such as

road shoulders that are frequently maintained, active landings, and river banks that are prone to annual scouring.

Old roadbeds and mining sites are examples of sites that are unproductive but need stabilization. Revegetation may be difficult since these sites are not yet ready to support desired native vegetation. Applying groundcover with mulch stabilizes the site against erosion, while creating a weed barrier. For these extreme cases, the initial site stabilization methods are the first stage for future revegetation efforts. The following best management practices would be applied during any restoration efforts:

- Include weed prevention measures, including project inspection and documentation during project operations;
- Retain bonds until reclamation requirements, including weed treatments, are completed, based on inspection and documentation;
- To prevent conditions favoring weed establishment, re-establish vegetation on bare ground caused by project disturbance as soon as possible using either natural recovery or artificial techniques;
- Maintain stockpiled, weed-free material in a weed-free condition;
- Revegetate disturbed soil in a manner that optimizes plant establishment for each specific project site. Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching, as necessary.
- Inspect seed and straw mulch to be used for site rehabilitation (for wattles, straw bales, dams, etc.) and certify that they are free of weed seed and propagules;
- Inspect and document all limited term ground-disturbing operations in weed infested areas for at least three growing seasons following completion of the project;
- Use native material where appropriate and feasible. Use certified weed-free or weed-seed-free hay or straw where certified materials are required and/or are reasonably available;
- Provide briefings that identify operational practices to reduce weed spread (for example, avoiding known weed infestation areas when locating fire lines);
- Evaluate options, including closure, to regulate the flow of traffic on sites where desired vegetation needs to be established.

INVENTORY

Information on the presence, location and distribution of noxious and invasive weeds is a key first step to all subsequent management efforts. Once located, noxious and invasive weeds would be mapped in GIS and recorded in the Forest Service FACTS database. Mapping provides information about the extent of the infestation, transport vectors, and the effectiveness of the control methods. Over the long-term, mapping can provide historical data for the epicenter of an infestation, rate and direction of spread.

CONTROL/ERADICATION

- *Manual Methods*

Manual treatment involves the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. Treatments include cutting noxious and invasive weeds above the ground level; pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and regrowth; cutting at the ground level or removing competing plants around desired species; or placing mulch around desired vegetation to limit competitive growth.

- **Hand Pulling:** Pulling or uprooting plants can be effective against some shrubs, tree saplings, and herbaceous invasive plants. Annuals and tap-rooted plants are particularly susceptible to control by hand-pulling. It is not as effective against many perennial invasive plants with deep underground stems and roots that are often left behind to re-sprout. The advantages of pulling include its small ecological impact, minimal damage to neighboring plants, and low (or no) cost for equipment or supplies.
- **Pulling Using Tools:** Most plant-pulling tools are designed to grip the plant stem and provide the leverage necessary to pull its roots out.
- **Clipping:** "Clipping" means to cut or remove seed heads and/or fruiting bodies to prevent germination. This method is labor-intensive and effective for small and spotty infestations.
- **Mulching:** Covering with certified "weed free and plastic free" mulch such as rice straw, grass clippings, wood chips, and newspaper. Requires regular maintenance to assure mulch is maintained in targeted area.
- **Tarping:** Placing tarps to shade out weeds or solarize them (to injure by long exposure to heat of the sun). Requires regular maintenance to assure tarps are secure, intact and achieving desired results.

- *Mechanical Methods*
  - **Mowing-** Mowing is a suppression measure that can prevent or decrease seed head production. To be effective in treating invasive species such as annual grasses (cheatgrass), mowing needs to occur every two to three weeks until flowering is completed. Mowed weeds will re-grow and set seed from a reduced height so a combined control method is generally necessary to be effective. Mowing would be conducted using a small (700 pounds) Bobcat ®-loader equipped with a mower attachment. Because mowing requires repeated treatments in the same year, can only be used on relatively flat (slopes less than 20%) and non-rocky terrain, this method will only be used in rare circumstances to treat small (less than 20 acres) infestations of invasive grasses. Mowing of invasive grasses over a small area produce minimal biomass and will not suppress native plant regeneration.
  - **Cutting with a Hand-held String or Blade Trimmer:** Mowing or cutting with handheld gas or battery powered string or blade trimmer. Treatment method is essentially the same as described above for the Bobcat ® mower but would generally be used to treat much smaller areas (less than one acre). Again this treatment would be rarely used as it requires multiple cuttings to be effective and follow up treatments with other controls such as herbicide or biological controls.

- *Biological Controls*

Biological control involves using living organisms, such as insects or grazing animals to suppress weed infestations. This treatment method is generally most appropriate in situations where weed infestations are large and well established, and on sites where other control methods are not feasible. Biocontrol methods generally suppress host weed populations, but may not contain or eradicate them.

- **Insects**-Biological control using insects is used to reduce a targeted weed population to an acceptable level by stressing target plants and reducing competition with the desired plant species. Insect agents are generally used for large expansive monocultures of

noxious and invasive species. Insect agents including plant eating insects, nematodes, flies, mites and, pathogens typically require 3-5 years for establishment and can limit the spread and density of target weed species by feeding on leaves, stems, roots and/or seed heads. Insects can affect plants directly by destroying vital plant tissues and functions, and indirectly, by increasing stress on the plant, which may reduce its ability to compete with other plants. Often, several biological control agents are used together to reduce noxious and invasive weeds density to an acceptable level. Biological control agents, with the exception of certain microorganisms, are exempt from regulation by the Environmental Protection Agency (EPA). Biological control agents are permitted for release by the USDA Animal Plant Health Inspection Service (APHIS).

- **Targeted Grazing**- Domestic animals, such as cattle, sheep, or goats, control the top-growth of certain noxious and invasive weeds which can help to weaken the plants and reduce the reproduction potential. The animals benefit by using the weeds as a food source and, after a brief adjustment period, can consume 50 percent or more of their daily diet of the weed, depending on the animal species. Although some Forest Service livestock grazing permits include authorizing cattle to graze invasive species such as cheatgrass, under the California Integrated Weed Management Project, livestock are only used under specific "targeted grazing" conditions. In targeted grazing, the kind of animals and amount and duration of grazing are specifically designed to help control a particular species of plant while minimizing the impacts on perennial native vegetation that is needed to help reduce the likelihood of reinvasion by undesirable plant species. Targeted grazing includes the use of goats, sheep, or other livestock that have been specifically 'trained' by their operators to eat certain plant species. Generally the operator also uses a portable fencing system to help 'target' the animals on focal species. Grazing animals, either alone or in combination with other treatment methods, can be highly effective in reducing weed populations through the use of targeted grazing prescriptions.

- *Other Treatment Methods*

  - **Prescribed Burning**- Prescribed burning would only be used in very limited situations where burning could help achieve management objectives. Prescribed burning is often used to control large expansive monocultures of cheatgrass and medusahead infestations. To be successful, burning would be conducted under very precise environmental conditions with intense management and oversite. A site specific burn plan and close consultation and coordination with a fuels specialist, would be completed before any prescribed burning activities occurred. Prescribed burning almost always needs to be conducted with other weed treatments to remove vegetation other treatments (e.g. herbicide, seeding etc.).

- *Herbicide Methods*

Chemical treatment involves the application of herbicides (chemical compounds), via a variety of application methods, at certain plant growth stages to kill noxious and invasive weed species. Depending on the type of herbicide selected, they can be used for noxious and invasive weed control or complete eradication and may be used in combination with other control treatments. Selection of an herbicide for site-specific application would depend on its chemical effectiveness on a particular noxious or invasive weed species, habitat types present, proximity to water, and presence or absence of sensitive plant, wildlife, and fish species. Herbicides are most effective on

pure stands of a single noxious or invasive weed plant where desirable and non-target plants are scarce or absent.

Chemicals can be used alone or in tank mixtures. Tank mixtures are only used if existing recommendations are available from State Department of Agriculture or other official resources such as Universities and or County cooperative extensions. If two or more different chemicals of the formulations are approved as a tank mixture on one or more of the labels, or have written recommendations for a tank mixture from the State Department of Agriculture, then it is permissible to tank mix these chemicals for a spray program. In addition to herbicides, a blue dye is added to tank mixtures to assist with monitoring the extent of the treatment coverage. The dye helps to reduce the chance of under and over application and would help detect and manage drift. Use of dye also reduces the risk to non-target species as a result of over application of herbicide and assures treatment of target species. Dye is water soluble, breaks down in sunlight, and washes away easily with water.

Herbicides would be used to control and eliminate new areas of noxious and invasive weeds and to contain the spread of existing infestations. Depending on the level of infestation, the type of weed species (e.g. deep rooted perennial or biannual), and/or its proximity to sensitive areas (e.g. water), herbicides can be applied through a variety of methods as described below:

- **Directed Broadcast/Spot Spray/Foliar spray-** Accomplished by sprayer wand with regulated nozzle in such a fashion that spray is concentrated at the target species. This is typically accomplished using a backpack sprayer.
- **Broadcast Spray-** Broadcast application (using truck/UTV mounted sprayers) over wider areas would be used only when necessary to treat large infestations. In some instances, broadcast spraying may be the only effective way to treat very dense and extensive weed infestations. When using broadcast spray drift reduction measures will be used. This will include low spray pressure of 30PSI or less, and spray nozzles with large orifices will be used. Wind speeds of 8mph or less, and no treatment if inversions are present. Drift cards will be used to help monitor spray applications.
- **Hand/Selective-** Treatment of individual plants to avoid spraying other desirable plants. There is a low likelihood of drift or delivery of herbicides away from treatment sites. This method is used in sensitive areas, such as near water, to avoid getting any herbicide on the soil or in the water. Hand/Selective methods could be done under more variable conditions than spot spraying or broadcast spraying. Specific methods include:
    - Dip and clip – similar to cut stump, where cutting tool is first dipped in herbicide, then used to cut target species to be treated
    - Cut stump – herbicide is sprayed on cut surfaces to eliminate or greatly reduce re-sprouts;
    - Wicking and wiping – herbicide is wiped onto the target species using a wick applicator.

- *Proposed Herbicides*

Seven herbicides are proposed for use in this project, using the application methods described above: **a*minopyralid, chlorsulfuron, glyphosate, imazapyr, tryclopyr, rimsulfuron* and *sulfometuron-methyl.*** A short description of the proposed herbicides and their uses can be found in the EA document under Description of Alternatives.

When appropriate, herbicides with different modes of action can be used to treat invasive plant species. Alternating herbicide types can help reduce the risk of populations developing herbicide tolerance from repeated application with the same herbicide.

Only herbicides that have been approved for use in the state of California and have a label certifying that the chemical has been approved for use by the Federal Environmental Protection Agency (EPA) and the California Department of Pesticide Regulation (DPR), would be used. The EPA requires the manufacturers to conduct ecological risk assessments that include toxicity testing on representative species of birds, mammals, freshwater fish, aquatic invertebrates, and terrestrial and aquatic plants. An ecological risk assessment uses the data collected to evaluate the likelihood that adverse ecological effects may occur as a result of herbicide use.

The Forest Service also conducts its own risk assessments, focusing specifically on the type of herbicide uses in forestry applications. The Forest Service contracts with Syracuse Environmental Research Associates, Inc. (SERA) to conduct human health and ecological risk assessments for herbicides that may be proposed for use on NFS lands (SERA 2007). The SERA risk assessments represent the best science available, using peer- reviewed articles from the scientific literature and current U.S. EPA documents, such as Confidential Business Information, to estimate the risk of adverse effects to non-target organisms. The risk assessments consider worst-case scenarios including accidental exposures and application at maximum label rates. Once a risk assessment is completed, pesticide use proposals are submitted to the Forest Supervisor for approval. Only herbicides that have SERA risk assessments and approved Pesticide Use proposals are proposed in this action, with the exception of one chemical, rimsulfuron. Rimsulfuron is an effective herbicide in the treatment of annual grasses and is preferable over Sulfometuron-methyl due to its relative stability in soils and overall better environmental characteristics. The Forest Service is in the process of developing a Pesticide Use Proposal for rimsulfuron. Once a USFS Pesticide Use Proposal is completed, the HTNF will no longer use sulfometuron-methyl and will replace it with rimsulfuron for the treatment of annual grasses.

Label directions, as well as all laws and regulations governing the use of pesticides, as required by the U.S. Environmental Protection Agency, the California Department of Pesticide Regulation, and Forest Service policy pertaining to pesticide use, would be followed. Coordination with the appropriate County Agricultural Commissioners would occur, and all required licenses and permits would be obtained prior to any pesticide application. The label contains information about the product, including its relative toxicity, potential hazard to humans and the environment, directions for use, storage and disposal, and first aid treatment in case of exposure. Label directions provide for public and worker safety by requiring posting of treated areas, pre-designation of mixing, storage and filling sites, and transportation and handling practices in accordance with toxicity of each formulation. Where herbicide treatments are proposed, the lowest effective label rates would be used. A site-specific safety and spill plan would be developed prior to herbicide applications.

- *Surfactants*

Herbicide treatments would include the use of a surfactant to enable herbicide penetration of the plant cuticle (a thick, waxy layer present on leaves and stems of most plants). Surfactants are materials that facilitate the activity of herbicides through emulsifying, wetting, spreading or otherwise modifying the properties of liquid chemicals. Treatments would also include use of a dye to assist the applicator in efficiently treating target plants and avoiding contact with plants that have already been treated. A methylated seed oil surfactant, such as Hasten or Competitor,

would be used as a surfactant and a water soluble dye, such as Highlight Blue, would be used as a dye. Both the surfactant and the dye are considered to be virtually non-toxic to humans.

MONITORING

Post-treatment monitoring will occur on all treatment sites to determine if treatment methods were successful. Level of success determinations will be commensurate with the treatment goal of the site (i.e. eradicate, control etc.). For example, if the objective was eradication, post-treatment monitoring would focus on a visual inspection of the treatment area for the presence or absence of the noxious or invasive weed species. This treatment would be considered successful when the target species is absent from its former location. Treatments designed to contain, control or suppress would be based on quantitative inspection (i.e. a reduction in percent cover or size of infestation of the noxious or invasive weed). If monitoring demonstrates that a treatment has not been effective, corrective actions (such as retreatment with the same or different method, or combination of methods) would be identified and implemented to enhance the level of success.

ANNUAL IMPLEMENTATION PROCESS

The Annual Implementation Process will include a yearly pre-treatment assessment of current weed conditions and will provide an annual plan for how, when, and where weeds will be treated. This process will include the coordination between the Forest Service Resource specialists and the District noxious weed program manager. The team will review up to date weed maps and proposed treatment areas and provide feedback on appropriate design features, special notifications, or other issues that may be associated with treatments. The Implementation Process will also help to prioritize treatment areas based on updated inventory information, proximity to sensitive areas, and/or the EDRR to newly discovered weed populations.

C. Rangeland Resources/Livestock Grazing Project Design Features

- The Forest Rangeland Specialist will be notified annually of the proposed treatment schedule. Grazing permittee's will be notified when treatments are proposed on their active allotments. If more intensive treatments are required on a particular allotment, treatment activities will be discussed with the permittee and included in the Annual Operating Instructions for Grazing Permits.

- Any need to exclude livestock from treated or revegetated sites within an allotment would be discussed with the permittee in the Annual Operating Instructions meeting, and would be met through herding practices (sheep), or temporary fencing (cattle) constructed by the Forest Service.

VII. ENVIRONMENTAL CONSQEQUENCES/EFFECTS ANALYSIS

Within the project area, infestations of noxious weeds generally occur in isolated patches in meadow systems near springs, streams, and along the right-of-way. Infestations of cheatgrass in grazing allotments tend to occur in mountain brush and sagebrush communities, and are often confined to the right-of-way. Noxious weeds have a competitive advantage in areas where the native bunchgrasses and forbs are stressed and degraded which can result in areas of disturbance. The simplest effect of some invasions is the displacement of native plant species by crowding, competition for resources, or other mechanisms (USDI BLM 1998).

Activities associated with livestock grazing can have many effects related to noxious and invasive weeds. Livestock can selectively forage on desired species, transport seeds from undesired species, and cause disturbance to soils and microbiotic crusts.

By selectively foraging on desired plants, livestock can give noxious and invasive weeds a competitive advantage over desired plants (Belsky and Gelbard 2000). Selective grazing of palatable plant species reduces their fitness relative to neighboring plants with lower palatability (Augustine and McNaughton 1998). Palatable, native perennial plant species may produce fewer seeds and seedlings in heavily grazed or browsed situations (Crawley 1983, Vavra *et al.* 2007) and thereby place unpalatable invasive species at a competitive advantage. Prescribed utilization levels set forth in the Forest Plan and Amendments are expected to reduce the effects of selective foraging by giving desired plant species greater opportunity to compete with the noxious and invasive weeds. The standards help ensure that native plants would be able to produce adequate root growth to remain vigorous and healthy. Increased cover of native plants reduces the likelihood of invasion from noxious weeds (Anderson and Inouye 2001). The increases in native plant cover would increase the vegetation communities' resistance to invasion of non-native species (Anderson and Inouye 2001).

LIVESTOCK GRAZING AND SEED DISPERSAL

Domestic livestock can play a role in transporting weed seed on the Forest in several ways. Livestock can enter the Forest with seeds in their wool, hooves, or digestive system from some other area (Chambers and MacMahon 1994, Olsen 1999). Long distance seed dispersal between pastures may occur when livestock are rotated (Parks *et al.* 2005). There is the likelihood of livestock spreading seeds within a given allotment because livestock utilize the allotments throughout the growing season in some areas. However, the Forest Service and grazing permittees can control livestock impacts by proper management practices. Controlling animal numbers (density), animal class (dry ewes vs. ewes with lambs), timing (season), frequency of use, and length of the grazing period. Grazing systems, management tools (such as location of water and salt), and control of animals (through herding and fencing) address the concern. Sheep are gregarious, and can be easily herded away from known noxious weed sites with the use of a herder with herding dogs on site at all times.

Equipment used to manage livestock may also be a source of seed transport; this can include OHVs, trucks, campers, water and stock trucks. Trunkle and Fay (1999), Parendes and Jones (2000), and Gelbard and Belnap (2003) showed that vehicles and roads were major vectors for noxious weed dispersal. In order to prevent seed transportation, equipment will be washed prior to entering the allotment.

LIVESTOCK GRAZING AND RANGE DEVELOPMENTS

Livestock movement routes and congregation areas within the project area provide ideal areas for noxious weed establishment. Livestock tend to concentrate in areas such as water developments, fence lines, and bedding areas. These areas are more likely to have soil quality problems such as compaction and bare ground. Impacts to soil quality are unavoidable in these areas; however, the total acres affected constitute a very small portion of the project area. Livestock developments are located within the project area on grazing allotments. Within these locations, there is soil disturbance and reduced competition from native vegetation. These sites will be monitored for EDRR.

DIRECT AND INDIRECT ENVIRONMENTAL EFFECTS TO LIVESTOCK OPERATIONS AND AVAILABLE FORAGE

Alternative 1- No Action

Under Alternative 1, the Bridgeport and Carson Ranger Districts would continue to control and/or eradicate invasive weeds utilizing manual methods within existing project areas that have NEPA decisions, but no other HTNF lands that occur in California (refer to Table 4). Prevention measures, inventory, and monitoring would continue on HTNF lands that occur in California outside of previously analyzed project areas as environmental analysis is not required for these activities. Alternative 1 would show a minor benefit to livestock grazing and their operations, however, prevention, inventory and monitoring is not equal to the physical control or eradication of noxious weeds using the most appropriate and effective method- outlined in the Proposed Action. Prevention measures will slow the spread of invasive plants, however, prevention alone is insufficient to address the spread of the existing infestations.

Invasive plants are spreading at an alarming rate in California, and fast encroaching onto National Forest System lands. Currently in California there are approximately 200 invasive plant species identified by the California Invasive Plant Council (Cal-IPC), about 127 of which Cal-IPC identifies as occurring in the Sierra Nevada region. Approximately 1,166 acres of non-native invasive plant species are currently mapped within California on HTNF lands. Several species that occur in large scattered populations (such as medusahead and cheatgrass), or for long tap-rooted perennial species (perennial pepperweed, hoary cress, Canada thistle) are highly competitive and invasive. Without appropriate treatment many of the infestations have the potential to rapidly increase. Non-native invasive species have prolific seeding rates that quickly colonize in disturbed settings. Invasive weeds can be harmful to livestock by injuring their mouth and hooves, and in some instances be lethal. Furthermore, displacement of native plant communities by invasive plants can have negative impacts on wildlife habitats (decrease), recreation opportunities (decrease), forage production for livestock (decrease), scenic beauty (decrease), and fire regimes (increase frequency).

Wildfire events, in particular, can pose the highest risk for weed spread with bare ground, high nutrient availability, and a lack of competing plants. This is well documented (inventory and monitoring) within the Washington Wildfire burn scar within the Wolf Creek C&H Allotment on the Carson Ranger District. The burn and lack of treatment has enabled the rapid spread of *Cirsium vulgare* within the allotment; the infestation grew from .1 acres to 31.21 acres in 2 years following the wildfire. This infestation is spreading to the most valuable grazing and wildlife forage within the allotment- a 300 plus acre meadow. Livestock may accelerate the infestation by foraging on the valuable native vegetation and allowing the non-natives to thrive and expand- outcompeting the preferred forage. If this infestation continues to expand into the meadow it will lose its productivity and economic value. The operation already had to rest the allotment after the wildfire, and this infestation could further impact the grazing plan in the future. Another example of post-wildfire effects is the conversion from native sagebrush communities to non-native annual grasslands following the fire. This type of conversion occurred on the Balls Canyon and Evans Canyon allotments, which are on the north end of the Carson Ranger District. The conversion results in reduced forage quality for livestock consumption, and prevents a productive use of the land.

Under both alternatives, native plant species would benefit from treatments in the long-term, although under the No Action Alternative none of the more efficient treatment methods such as chemicals would be used, and not all areas or grazing allotments would be treated (reference table 4). Under the No Action Alternative there would be less of a benefit and success rate for

control/eradication than under the Proposed Action because hand pulling is not always effective or feasible for some species that occur in the project area. Without intense treatment using the most appropriate method many infestations will increase, and new infestations will take hold. This impact to the native vegetation could in the long term lead to adverse impacts to available forage for livestock and force changes to grazing strategies/operators.

Alternative 2- Proposed Action

Under Alternative 2, the Proposed Action, project activities would have some impact on permitted livestock operations within the California allotments on the Bridgeport and Carson Ranger Districts.

In the short-term, portions of the allotments could be effected by noxious weed treatment activities. Livestock grazing may need to be delayed or excluded on portions of the allotments while treatments and/or revegetation occur. The District Rangeland Specialists will be notified annually of the proposed treatment schedule, and permittees will be notified when treatments are proposed on their active allotments. If more intensive treatments are required on a particular allotment, treatment activities will be discussed with the permittee and included in the Annual Operating Instructions. Any need to exclude livestock from treated or revegetated sites within an allotment would be discussed with the permittee in the Annual Operating Instructions meeting, and would be met through herding practices (sheep), or temporary fencing (cattle). If warranted, the Forest Service will coordinate with the permittee to develop an adjusted grazing strategy that will have minimal impact on current grazing operations while noxious weed treatments are occurring. Utilization standards, and general guidelines associated with utilization will maintain ecological conditions in concentrated use areas to prevent additional weed expansion.

EFFECTS FROM MECHANICAL TREATMENTS

Mowing would be conducted using a small (700 pounds) Bobcat ®-loader equipped with a mower attachment. Because mowing requires repeated treatments in the same year, can only be used on relatively flat (slopes less than 20%) and non-rocky terrain, this method will only be used in rare circumstances to treat small (less than 20 acres) infestations of invasive grasses. Mowing or cutting with handheld gas or battery powered string or blade trimmer. Treatment method is essentially the same as described above for the Bobcat ® mower but would generally be used to treat much smaller areas (less than one acre). Again this treatment would be rarely used as it requires multiple cuttings to be effective and follow up treatments with other controls such as herbicide or biological controls. Use of mechanical treatments could temporarily reduce the amount of livestock forage on the treatment site. Treatments that rip up plants, would be more likely to reduce forage than treatments that cut plants off at the base. These effects would be short-term in nature, as forage species would regrow following treatments. The length of time to rest a treatment site from livestock would vary by site and may go up to 3 years if it occurs within bi-state dps sage grouse habitat. If livestock were removed from the area specifically to facilitate the vegetation treatment, the grazing permittee would be temporarily impacted as a result of the area being unavailable for grazing. The permittee would need to either find alternative grazing areas, or modify grazing operations to account for the unavailable forage.

Mechanical methods that remove competition and overstory vegetation would be expected to enhance grass production if grasses are present on the site. However, mechanical removal could negatively affect plants by compacting soils, creating bare ground, and uprooting desirable species. Ground disturbance could provide increased opportunities for weeds and increase the need to reseed after treatment; mechanical treatment methods will rarely be used.

EFFECTS FROM MANUAL TREATMENTS

Manual treatment involves the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. Treatments include cutting noxious and invasive weeds above the ground level; pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and regrowth; cutting at the ground level or removing competing plants around desired species; or placing mulch around desired vegetation to limit competitive growth. Manual treatments would target the removal of undesirable species, but would not affect desirable species. Manual treatments would have minimal effects to livestock operations and their forage because treatments could be scheduled for when livestock are not present, as well as continue while livestock are actively grazing; livestock would not need to be removed from the area. Therefore, manual treatments would be beneficial to livestock.

EFFECTS FROM BIOLOGICAL TREATMENTS

Insects and pathogens released to manage noxious weeds on rangelands would not be likely to affect livestock. These agents target undesirable species, and could result in a long-term increase in the quality of forage on a treatment site. However, it is possible that in some situations use of these agents could prohibit animals from using a pasture for short periods of time- ranging from a few days (bio agents) to a month (other domestic livestock such as goats).

Use of domestic livestock to manage undesirable vegetation could affect the livestock that regularly graze on public lands under a grazing permit or lease. When managed improperly, these animals could compete for the same forage resources as domestic livestock. Under proper conditions, it has been demonstrated that the use of sheep and goats to manage whitetop through targeted grazing has improved the conditions of the range, opening up infested sites for grass regrowth, and thus providing additional forage for authorized livestock grazing. In a targeted grazing example, permitted livestock could be kept out of a pasture for the duration of this type of biological treatment.

EFFECTS FROM CHEMICAL TREATMENTS

The seven proposed herbicides for use in this project contain a label that lists all of the risks and recommendations of use on rangelands and pastures with livestock. As long as the herbicides are applied at the labeled rate, there are no restrictions on grazing following application of the herbicides. Several factors influence the effectiveness of the herbicide application, including timing and method of application, herbicide used, application site characteristics, and environmental conditions. The direct effects of herbicide use on livestock depend on the sensitivity of each species to the particular herbicide used. Indirect effects include the degree to which a species or individual is positively or negatively affected by changes in rangeland conditions.

Livestock would have a greater chance of being affected by herbicide use if their range extent was completely treated or areas frequented by the livestock were treated. However, livestock could be specifically removed from an area during weeds treatment, as directed on the herbicide label, or treatments could be scheduled to occur when livestock were not present, adhering to the re-entry interval specified on the herbicide label. In conjunction with the identified grazing restrictions listed on herbicide labels, additional restrictions may be identified that require the livestock owner to remove the livestock from the treated area for a specified period of time prior to slaughter. As described for other vegetation treatment methods, some herbicide treatments may require additional rest from livestock to ensure that more desirable vegetation has the opportunity to increase and

reestablish on those sites from which undesirable vegetation has been removed (BLM 2007). If livestock were removed from the area specifically to facilitate the vegetation treatment, the grazing permittee would be temporarily impacted as a result of the area being unavailable for grazing. The permittee would need to either find alternative grazing areas, or modify grazing operations to account for the unavailable forage. Even though large treatments would usually occur when livestock were not in the treated area, some risk of indirect contact and consumption of contaminated vegetation over a large area would still exist. The use of spot treatment applications, in accordance with label directions, would reduce the potential effect on livestock. To reduce the effects to livestock and livestock operations, site specific assessments of proposed treatment areas would be conducted prior to treating an allotment. Assessments would take into account the timing of livestock grazing for a particular allotment, the level and type of weed infestations, and the required time necessary to rest the allotment following treatment.

The District Rangeland Management Specialists will be involved in the Annual Implementation process and will know where and when treatments are occurring, annually, and will coordinate with the grazing permittee's when grazing adjustments need to occur.

In the long-term (10 years, or the life of the term grazing permit), noxious weed treatments will reduce or eliminate the threat of these species providing for healthy riparian, upland, and aspen communities, which offer numerous benefits including forage for livestock. The removal of noxious weeds would lead to improved range conditions and the availability of additional forage for livestock.

EFFECTS FROM PRESCRIBED FIRE TREATMENTS

Prescribed burning would only be used in very limited situations where burning could help achieve management objectives. Prescribed burning is often used to control large expansive monocultures of cheatgrass and medusahead infestations. To be successful, burning almost always needs to be conducted with other weed treatments (e.g. herbicide, seeding etc). Prior to the use of prescribed fire, a site-specific analysis will be conducted in which mitigation will be identified to address impacts on the priorities impacted (including livestock operations within the allotments).

The effects of fire on livestock would depend largely on the timing of the fire and the pre-burn condition of the site. Over the short-term (two to three years), prescribed burning would likely reduce the cover of grass and forb species available to livestock. Livestock would also have to be relocated during the treatment. In addition, livestock would need to be kept off of treated areas after a prescribed fire to give forage ample time to recover. The length of time would vary by site; but at a minimum, 2 years of grazing rest (3 years of rest within bi-state dps habitat) would be required following fire. The burning of rangeland generally results in increased perennial grass production and grazing capacity as well as increased forage availability from the removal of physical obstructions posed by annual grasses, brush and small trees. Following fire, there may be greatly increased amounts of flowering and fruiting, including a significantly enhanced output of grass seed.

CUMULATIVE EFFECTS

The effects of many past and ongoing activities are reflected in the descriptions of current conditions of the resources. Reasonably foreseeable activities are considered for cumulative effects on rangeland resources. The future and present actions with the potential to impact livestock operations are below.

Vegetation treatments within the two Districts sometimes require rest from livestock while treatments are taking place or until revegetation occurs. Livestock operations could additionally be impacted by required rest after treatments. In most cases it would be one to three years, unless it is an aspen enhancement project (e.g. Monitor Pass Aspen Enhancement Project, Carson RD) which requires rest until aspen regeneration reaches above livestock browse height. Rest could take up to 5 years; however, 5 years is half the life of the 10 year Term Grazing Permit for the allotments.

In most cases, the Forest works with the grazing permittees to find alternative sources of forage for livestock while an allotment, or portions of an allotment, need to be rested. However, in some cases, adjustments to the season of use, utilization, and streambank alteration levels is warranted. The recent need to adjust livestock grazing in portions of the Bridgeport and Carson Ranger Districts to avoid impacts to Sierra Nevada Yellow Legged Frog, Yosemite Toad, and Lahontan Cutthroat trout habitat in compliance with the Endangered Species Act is an example of applying a change in the season of use and grazing standards and guidelines. Another example will be the modification of livestock grazing permits in bi-state dps sage grouse habitat so that they are consistent with the standards and guidelines identified in the bi-state dps sage grouse Forest Plan Amendment. The permits will be modified to protect critical habitat, or to be consistent with plan direction; the season of use, utilization, and streambank alteration levels will be adjusted; however, the permitted livestock numbers are not anticipated to change.

Additionally, the 53 grazing allotments within the project area will continue to go through Range NEPA, which will ultimately give the permittees more flexibility by broadening the season of use, but potentially adjust utilization and streambank alteration levels. Infrastructure associated with grazing allotments/operations to assist in grazing management include allotment and pasture fencing, water troughs with pipelines, and corrals. Occasionally new range developments are proposed on the allotments and best management practices would be applied prior to and during construction.

When the potential effects of this action (short-term, small scale adjustments to avoid grazing on recently treated areas) is considered along with the other actions effecting livestock grazing permittees, it does not result in an accumulation of effects that exceed the permittee's capacity to continue grazing livestock. While the result of any of these past, present or reasonably foreseeable actions may result in how or when a permittee grazes livestock under their permit, they will not reduce the number of permitted livestock or result in a significant loss of access to available forage; in reality the actions are going to increase rangeland health and available forage for livestock.

VIII. FOREST PLAN CONSISTENCY

The proposed action is consistent with management direction for rangeland resources in the Toiyabe Forest Plan, the Sierra Nevada Forest Plan Amendment, and the Greater Sage-Grouse Bi-State DPS Forest Plan Amendment.

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X. APPENDICES

APPENDIX A

The Toiyabe National Forest Land and Resource Management Plan (Forest Plan) sets out the direction for managing the land and resources of the Forest (USDA FS 1986). Desired conditions for the Forest are established during the forest planning process. The Forest Plan identifies the following standards and guidelines that intersect with livestock grazing:

- Strive to achieve or maintain a minimum of 60 percent ground cover on upland rangelands with the exceptions of low sagebrush types, Wyoming big sagebrush types, crested wheatgrass seedings, pinyon/juniper types, and south facing sagebrush types on granitic slopes of the Sierra Nevada. (pg. IV-26).

- Achieve or maintain rangeland in satisfactory condition which is defined as: (1) having a resource value rating (RVR) of 50 or above for vegetation or other features; or (2) being in a mid-succession or higher class of ecological status; and (3) having a stable or upward trend in soil and vegetation. (pg. IV-26-27).

- Implement non-continuous use management systems on all livestock grazing allotments. When feasible, use a rest rotation system when significant range is in unsatisfactory condition. (IV-27).

- Forage Utilization Standards obtained from the 1986 Forest Plan are to be used as maximum standards for the development of proper use criteria.

- Proper use criteria will be established, in writing, for each unit of each grazing allotment. Proper use criteria are a mandatory part of each allotment management plan. Long-term trend studies are also mandatory to determine if proper use criteria are correct and to determine what is occurring in regard to range condition. Establishing proper use criteria requires Interdisciplinary (ID) team involvement. Proper use criteria define the permissible grazing level in the range unit or pasture (IV-30).

The Toiyabe Forest Plan was amended by the Sierra Nevada Forest Plan Amendment (SNFPA) in 2001 and 2004 and includes additional direction related to desired conditions and livestock grazing within Riparian Conservation Areas (RCAs). Riparian Conservation areas are land allocations that are managed to maintain or restore the function of aquatic, riparian and meadow ecosystems (USDA 2001 ROD pp. A-7). RCAs generally include all vegetation within 300 feet of the bank full edge of a perennial stream and 150 feet from seasonally flowing streams.

Desired conditions for meadows within RCAs includes maintaining the "ecological status of meadow vegetation in late seral condition" (50 percent or more of the relative cover of the herbaceous layer is late seral with high similarity to the potential natural community) (USDA 2004 ROD pp42). Management direction related to meeting the desired condition includes the following Riparian Conservation Objectives (RCO):

1.) The SNFPA sets maximum utilization levels on forage use in meadows based on the grazing system being used on the allotment. For season-long grazing on meadows in early seral status, the SNFPA limits livestock utilization of grass and grass-like plants to 30 percent (or minimum 6-inch stubble height). If the meadows are in late seral status livestock utilization of grass and grass-like plants is limited to a maximum of 40 percent (or minimum 4-inch stubble height). Ecological status is to be determined by using Regional ecological scorecards and range plant list in regional range handbooks. If meadow ecological status is determined to be moving in a downward trend, grazing is to be modified or suspended (USDA 2004-RCO #5-120, pp. 65).

2.) Under intensive grazing systems (such as rest-rotation and deferred rotation) where meadows are receiving a period of rest, utilization levels can be higher than the levels described above if the meadow is maintained in late seral status and meadow-associated species are not being impacted. Degraded meadows require total rest from grazing until they have recovered and have moved to mid- or late seral status. Degraded meadows are defined as those in early seral status with greater than 10 percent of the meadow area in bare soil and active erosion (USDA 2004-RCO #5-120, pp. 65).

3.) Browsing is limited to no more than 20 percent of the annual leader growth of mature riparian shrubs and no more than 20 percent of individual seedlings. Livestock are to be removed from any area of an allotment when browsing indicates a change in livestock preference from grazing herbaceous vegetation to browsing woody riparian vegetation (USDA 2004-RCO #5-121, pp. 65

4.) Prevent disturbance to streambanks and natural lake and pond shorelines from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots (USDA 2004-RCO #2-103 pp. 63).

Additional direction related to the desired habitat conditions and livestock management/grazing will be required pending the final Record of Decision for the Greater Sage-Grouse Bi-State Distinct Population Segment Forest Plan Amendment. Desired conditions, and goals and objectives will be incorporated into the management of the grazing allotments on the Bridgeport and Carson Ranger Districts. Management direction related to livestock grazing and sage grouse habitat management are as follows:

RP-S-01: Grazing permits, annual operating instructions, or other appropriate mechanism for livestock management shall include terms, conditions, and direction to move toward or maintain bi-state DPS habitat desired conditions.

RP-G-01: In bi-state DPS habitat, consider closure of grazing allotments, pastures, or portions of pastures, or managing the allotment as a forage reserve as consistent with maintaining sage-grouse habitat based on desired conditions as opportunities arise under applicable regulations, where removal of livestock grazing would enhance the ability to achieve desired bi-state DPS habitat conditions (table 1a or 1b).

RU-S-01: Manage livestock grazing to maintain residual cover of herbaceous vegetation so as to reduce predation during breeding/nesting season (March 1 to June 30 critical disturbance period; dates may shift 2 weeks back or forward in atypically dry or wet years based on observations of breeding/nesting activity).

RU-S-02: Manage livestock grazing in accordance with the utilization standards in this table.

Community Type	Percent Utilization of Key Species	Terms and Conditions
Mountain Big Sagebrush	<45% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
Wyoming and Basin Big Sagebrush	<35% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
Black Sagebrush	<35% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
Riparian and Wet Meadows	<50% herbaceous species; <35% woody species (current year's growth); or average stubble height of at least 4 to 6 inches (depending on site capability and potential) for herbaceous riparian vegetation	Average stubble height 4 to 6 inches: Livestock removed in 5 days of reaching utilization level based on site; or (sequential action) no grazing from May 15 to August 30 in brood-rearing habitat

Figure 1. California Integrated Weed Management Project Area-Humboldt-Toiyabe National Forest

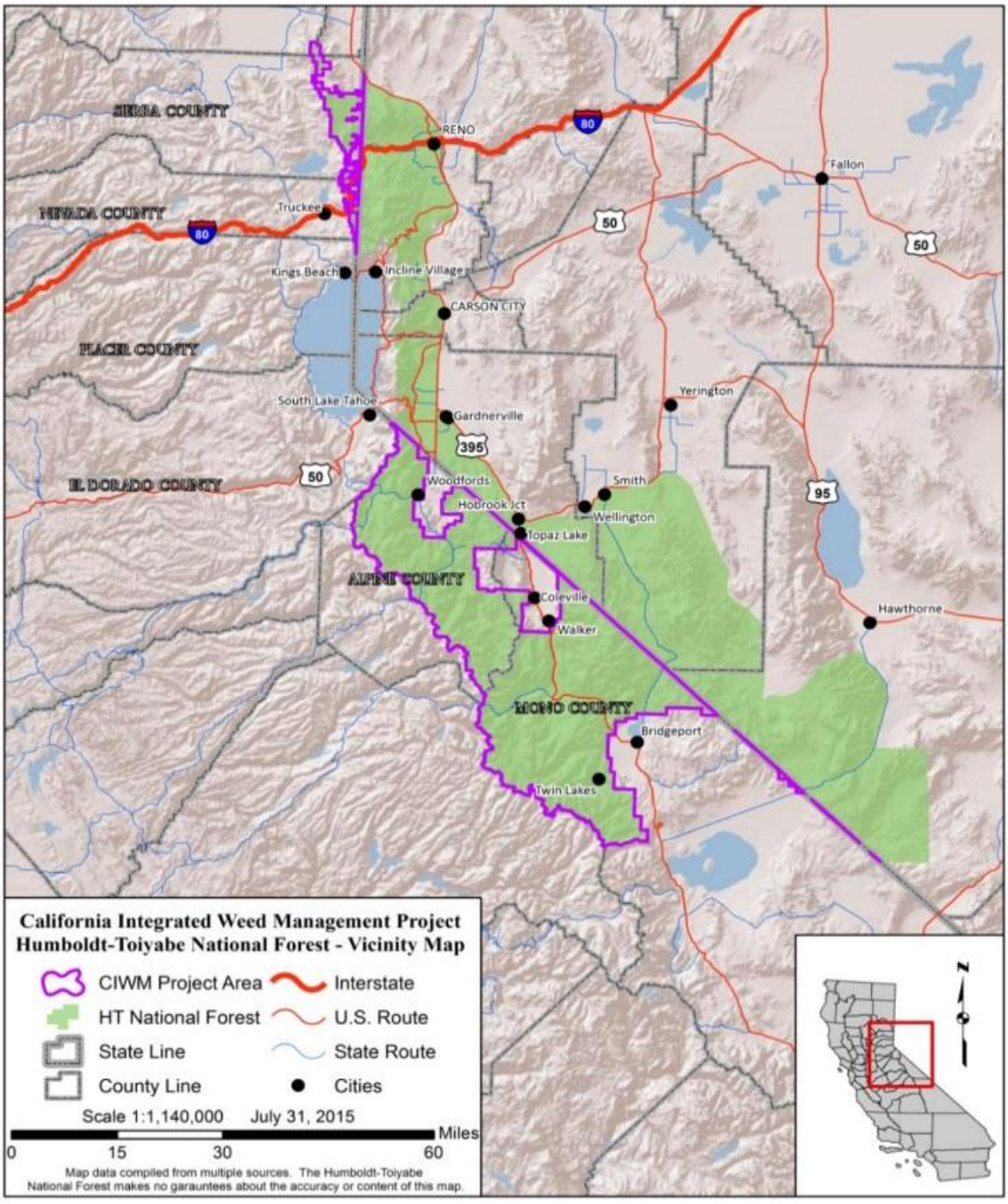

Figure 2. Current invasive weed populations within the northern portion of the project area

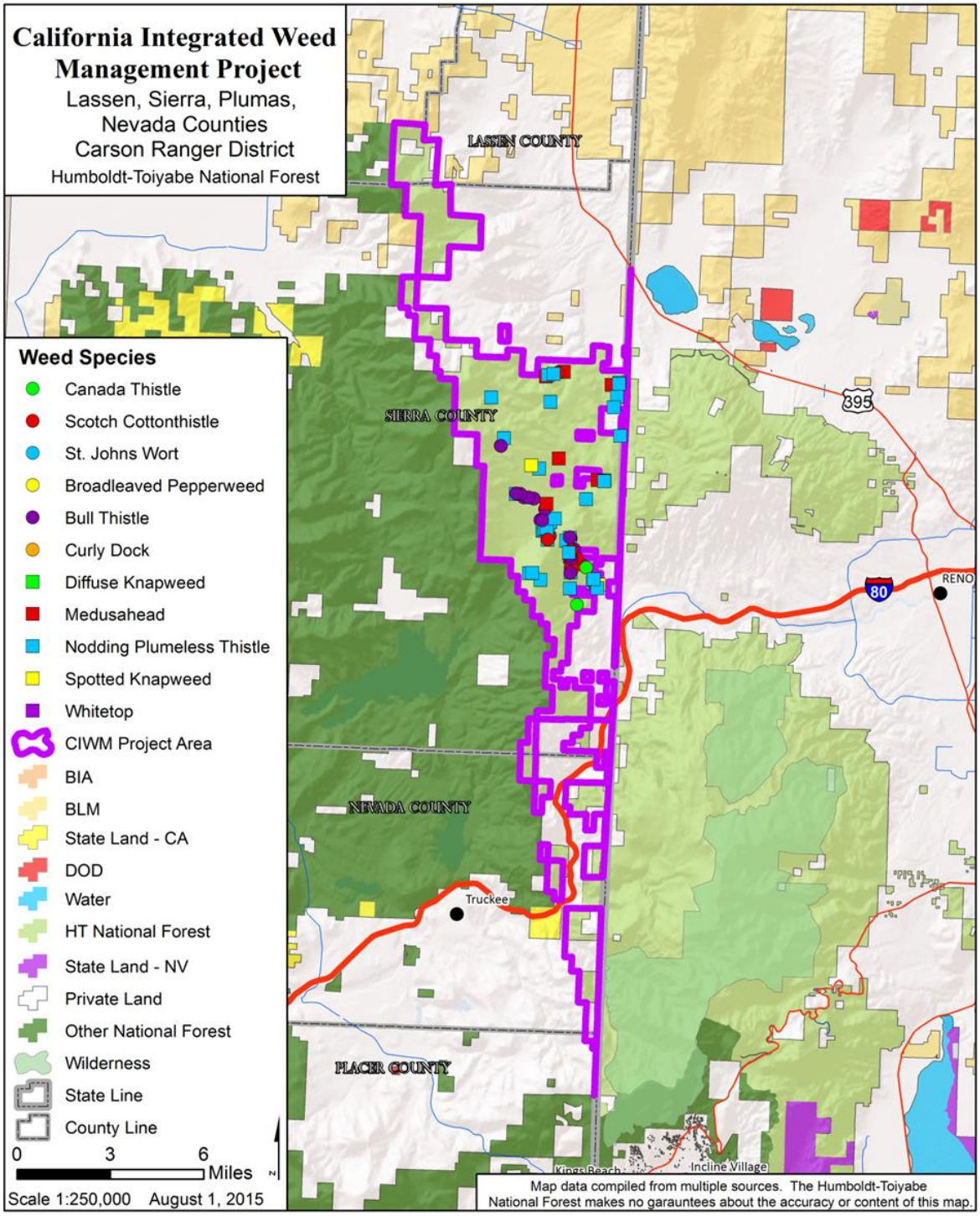

Figure 3. Current invasive weed populations in the central portion of the project area

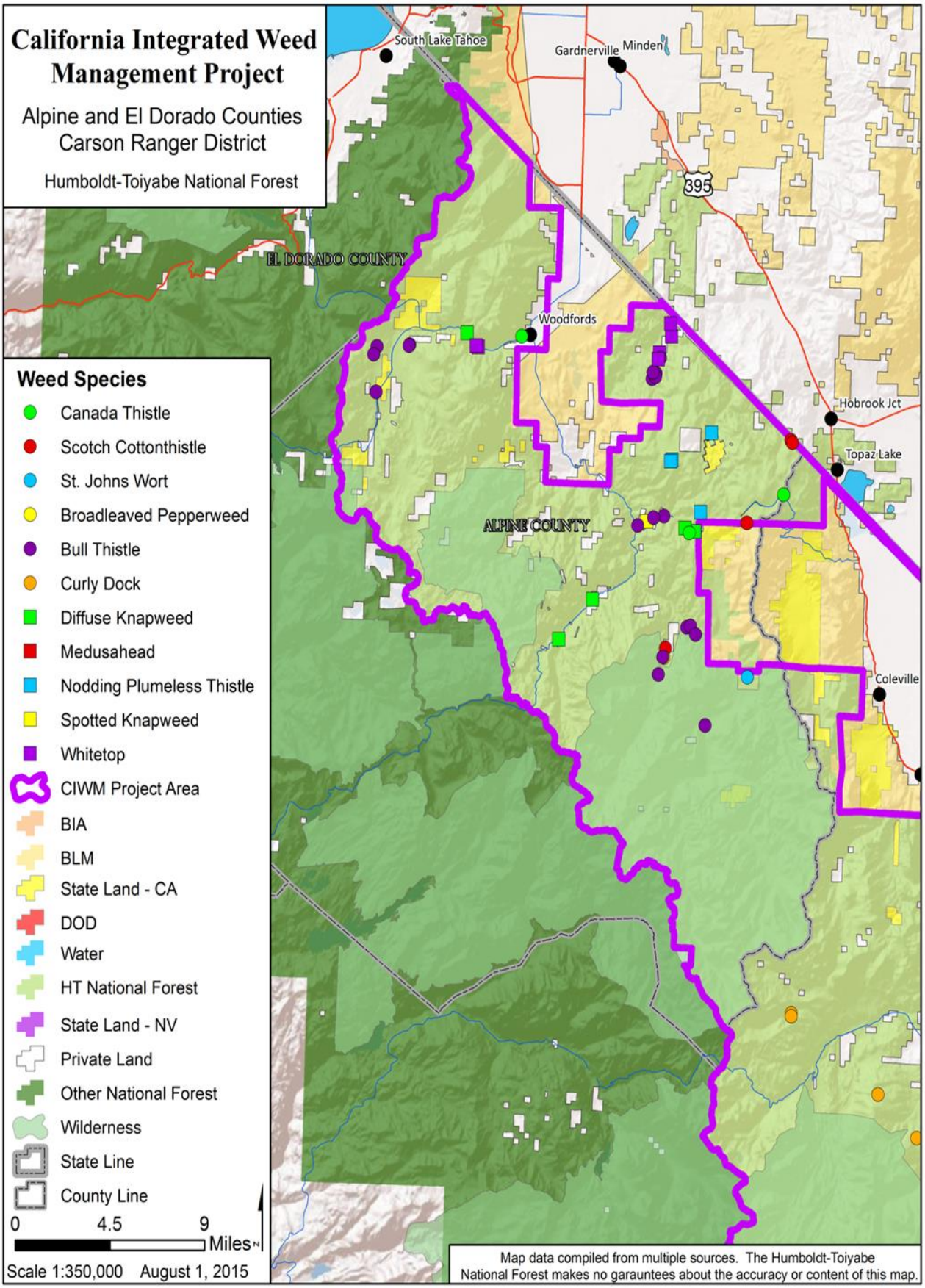

Figure 4. Current invasive weed populations in the southern portion of the project area